Unit 8
Day 3
The Quadratic Formula

Consider the standard form of a quadratic:

$ax^2 + bx + c = 0$ complete the square to solve for x

PROOF

1) $2x^2 + 4x - 7 = 0$

$a=2 \quad b=4 \quad c=-7$

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

$$x = \frac{-4 \pm \sqrt{16-4(2)(-7)}}{2(2)}$$

$$x = \frac{-4 \pm \sqrt{16+56}}{4}$$

$$x = \frac{-4 \pm \sqrt{72}}{4} = \frac{-4 \pm 6\sqrt{2}}{4} = \frac{-2 \pm 3\sqrt{2}}{2}$$

$$\therefore \left\{ \frac{-2+3\sqrt{2}}{2}, \frac{-2-3\sqrt{2}}{2} \right\}$$

2) $\left(\frac{1}{3}m^2+\frac{1}{5}m+\frac{1}{15}=0\right)^{15}$

$5m^2+3m+1=0$

$a=5 \quad b=3 \quad c=1$

$$X=\frac{-b\pm\sqrt{b^2-4ac}}{2a}=\frac{-3\pm\sqrt{9-4(5)(1)}}{10}$$

$$=\frac{-3\pm\sqrt{-11}}{10}$$

$$\left\{\frac{-3}{10}+\frac{i\sqrt{11}}{10},\frac{-3}{10}-\frac{i\sqrt{11}}{10}\right\}=\frac{-3\pm i\sqrt{11}}{10}$$

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3) $a^2 + a\sqrt{3} + 5 = -2$

$a^2 + a\sqrt{3} + 7 = 0$

$a = 1 \quad b = \sqrt{3} \quad c = 7$

$$a = \frac{-\sqrt{3} \pm \sqrt{3 - 4(1)(7)}}{2} = \frac{-\sqrt{3} \pm \sqrt{-25}}{2}$$

$$= \frac{-\sqrt{3} \pm 5i}{2}$$

$$\left\{ \frac{-\sqrt{3} + 5i}{2}, \frac{-\sqrt{3}}{2} - \frac{5i}{2} \right\}$$

HW pg 118-119 23-34, 39-44 all

$x^2 + 2x$

$x^2 + 2 = 0$

$x^2 - x = 0$

$x^3 + 2x^2 + 3x = 0$

$x(x^2 + 2x + 3) = 0$

$x = 0$